Final Contractor's SAP (wastewater treatment plant) LOWSF 4.2.11

City of Seattle
Gregory J. Nickels, Mayor

Seattle Public Utilities
Chuck Clarke, Director

Letter of Transmittal #78A

Date: May 15, 2009

To: **E.J. Rody & Sons Inc.**
Mail Stop:
Attn:
From: **Jack Tipton**

Re: **GEORGETOWN FLUME DEMOLITION, REMOVAL AND DRAINAGE PROJECT**
PW 2008 - 025 W/A #: 999 Contr #:
Senior Engineer: **John Summers**
Project Manager: **Wanda Schulze**
Contractor: **E.J. Rody & Sons Inc.**

Received: **5/8/2009**
Sent For Review: **5/8/2009**

Description: CONTRACTOR'S SAMPLING and ANALYSIS PLAN (RE-SUBMITTAL) Document #:
Document Type: Plan
Remarks:
Bid Item(s): 6

(for Wastewater Treatment Plant)

Contractor, Please See Submittal Review Results as Listed Below

Reviewer	Copies	Sent	A	I	R	Recvd	NE	RJ	MC	RR	SN
Project Management - Wanda Schulze	1	5/8/2009			X	5/14/2009					X

KEY: A - For Approval NE - No Exceptions Taken RR - Revise and Resubmit
I - Information Only RJ - Rejected SN - See Notes

Copies To: ☐ Senior ☐ Lab ☒ File

Additional Copies To:
(Resident Engineer) Bryan Nicholson

Signed: Jack W. Tipton

IF ENCLOSURES ARE NOT AS NOTED,
PLEASE NOTIFY SENDER AT ONCE

City of Seattle
Gregory J. Nickels, Mayor

Seattle Public Utilities
Chuck Clarke, Director

Letter of Transmittal #78

Date: May 8, 2009

To: **Wanda Schulze (Project Management)**
Mail Stop:
Attn:
From: **Jack Tipton**

Re: **GEORGETOWN FLUME DEMOLITION, REMOVAL AND DRAINAGE PROJECT**
PW 2008 - 025 W/A #: 999 Contr.#:
Senior Engineer: **John Summers**
Project Manager: **Wanda Schulze**
Contractor: **E.J. Rody & Sons Inc.**

Received: **5/8/2009**
Sent For Review: **5/8/2009**
Due Back From Review: **5/20/2009**
Returned to Contractor:

Description: CONTRACTOR'S SAMPLING and ANALYSIS PLAN (RE-SUBMITTAL) Document #:
Document Type: Plan
Remarks:
Bid Item(s): 6

Transmitted as Follows:
- ☐ For Approval
- ☐ Information Only
- ☒ Review & Comment

Reviewer Evaluation
- ☐ No Exceptions Taken
- ☐ Rejected
- ☐ Make Corrections As Noted
- ☐ Revise And Resubmit
- ☒ See Notes
- ☐

Reviewer	Copies	Sent	A	I	R	Recvd	NE	RJ	MC	RR	SN
Project Management - Wanda Schulze	1	5/8/2009			X						X

See attached Notes Wanda Schulze 5/19/09

KEY: A - For Approval NE - No Exceptions Taken RR - Revise and Resubmit
I - Information Only RJ - Rejected SN - See Notes

Copies To: ☐ Senior ☐ Lab ☐ File

Additional Copies To:

Signed: Jack W. Tipton

IF ENCLOSURES ARE NOT AS NOTED,
PLEASE NOTIFY SENDER AT ONCE

HERRERA
ENVIRONMENTAL
CONSULTANTS

2200 6th Avenue
Suite 1100
Seattle, Washington 98121
Phone: 206-441-9080
Fax: 206-441-9108
www.herrerainc.com

RESPONSE

Submittal No.:	**0078**
Date Submitted to Herrera:	**08May 09**
Requested Return Date:	**08May 09**
Date Required:	**NA**
Date Returned:	**08May 09**

Project Name: Georgetown Flume Demolition, Removal, and Drainage Project
PWCC No. 2008-025

Herrera Project Number: 06-03385-001

Title of Submittal (If no title, describe): Contractor's Sampling and Analysis Plan (Resubmittal)

Nature of Request (or attachment): Submittal for Approval

Agency/Contractor: E.J. Rody & Sons, Inc.
Contact Person: Mike McFarland

Response to Submittal:

Comment No. 1: The Contractor shall follow standard sampling protocols typically associated with work at contaminated sites regulated by USEPA and Ecology, including proper chain of custody procedures and container handling to minimize the potential for cross contamination.

Submittal Status: See Notes

Heidi Machel

Reviewer: Heidi Machel, Herrera Environmental Consultants

Contractor's Shop Drawing Review & Approval Request

Date: 5/8/09
To: Construction Administration Section, Seattle Public Utilities
From: E J Rody and Sons, Inc.
Contract Name: Georgetown Flume Demolition, Removal & Drain **PW #:** 2008-025

Bid Items: 6- Contractor Work Plans- RESUBMITTAL
Drawing Sheet #(s):
Material Standard (ASTM, AWWA, etc.):
Location/Intended Use: Contractor's Sampling and Analysis Plan Spec. 1-07.34(1)1E

Deviations from contract requirements and / or Standard Plans:

<<Enter Deviations here>>

This is to certify that the Contractor has reviewed and approved the Shop Drawing #(s) to for accuracy, completeness, and compliance with the Contract requirements:

Mike McFarland 5/8/09

Contractor's signature Date

Contractor's Name and Address:

E J Rody and Sons, Inc.
8705 Canyon Road East, #B
Puyallup, WA 98371
253-539-0766
Mike McFarland

Note: One Shop Drawing Review Form shall be submitted for each shop drawing submittal package.

Contractors Sampling and Analysis Plan- Review Response

Georgetown Flume Demolition, Removal and Drainage
PW # 2008-025
E J Rody and Sons, Inc

Comment No. 1: The SAP has been modified removing all references to soils testing, as the waste site will accept soils based on the project characterization report. The sampling objective, method and frequency are defined in the water testing section.

Comment No. 2: Contaminates of concern are defined as required in the King County discharge permit.

Comment No. 3: N/A

Comment No. 4: Sample frequency is defined in table 1. Sediment from media changes will be treated as contaminated and disposed of accordingly.

Comment No. 5, 6, and 7: Fremont Analytical information is attached detailing qualification, testing standards, and sample report format.

Comment No. 8: Waste Management will accept the material based on the characterization report.

3 SAMPLING AND ANALYSIS PLAN

3.1 Purpose

The purpose of this plan is to establish a consistent set of methods and procedures to be followed during water quality sampling and analyses. Consistent and conscientious methods and procedures are essential for ensuring that data relating to the efficacy of the treatment system[s] is valid and accurately depicts actual water quality variables such as pH and turbidity as well as those set forth in the King County Major Discharge Authorization Permit (Permit). The ultimate goal of this plan is to collect, analyze, and report those data elements that are deemed essential to characterizing the discharge of treated water from the project.

This sampling and analysis plan utilizes the requirements set forth in the Permit as minimum criteria. All methods and procedures contained in the Permit shall be strictly adhered to in order to ensure data integrity. Samples will be collected and analyzed at intervals described in the Permit. Sample results will be submitted to EJ Rody, and others as necessary. The results will depict the contractor's compliance (or non-compliance) with the water quality standards set forth in the Permit, and will serve as benchmarks during project progression.

3.2 King County Major Discharge Authorization Permit

This sampling and analysis plan will follow the procedures set forth in the King County Major Discharge Authorization Permit (Attachment 1) when applicable.

At a minimum, based on the current understanding of the scope and complexity of this project, Table 1 includes data elements which are considered essential to the accurate characterization of water quality and quantity variables for each water treatment system deployed on the project. Additional data elements that are deemed necessary by permitting authorities are included in Table 2. These additional data elements will be integrated into the overall data collection and management effort. Also, there shall be no odor of solvent, gasoline, or hydrogen sulfide (rotten egg odor), oil sheen, unusual color, or visible turbidity. During water treatment operations, pH will be closely monitored and maintained between 5.5 (s.u.) and 12.0 (s.u.). All these parameters will be closely monitored by on-site personnel during periods of water treatment operation.

If a violation of any discharge limits or operating criteria is detected in monitoring, the technician will notify their supervisor, who will then notify the Industrial Waste Program immediately upon receipt of the analytical results.

Table 1: Self-Monitoring Requirements

Parameter		Frequency	Sample Type	Daily Average Discharge Limit
PCB's	Aroclor 1016	Each Batch	Composite*	0.3 µg/L
	Aroclor 1221	Each Batch	Composite*	0.3 µg/L
	Aroclor 1232	Each Batch	Composite*	0.3 µg/L
	Aroclor 1242	Each Batch	Composite*	0.3 µg/L
	Aroclor 1248	Each Batch	Composite*	0.3 µg/L
	Aroclor 1254	Each Batch	Composite*	0.3 µg/L
	Aroclor 1260	Each Batch	Composite*	0.3 µg/L
Benzo(a)pyrene		Weekly	Composite*	6.3 µg/L
Lead		Weekly/Monthly**	Composite*	2.0 mg/L
Mercury		Weekly/Monthly**	Composite*	0.1 mg/L
Discharge Volume		Daily	Meter Reading	144,000 gpd
Total Monthly Discharge Volume		Report Monthly	Meter Reading	NA
Hydrogen Sulfide		Only if operating criteria are exceeded	Meter Reading	See General Discharge Limitations section of the King County Major Discharge Authroization.
Settleable Solids		Only if operating criteria are exceeded	Grab	
Explosivity		Only if operating criteria are exceeded	Meter Reading	

* A composite sample is defined as at least four grab samples of equal volume taken throughout the processing day from a well-mixed final effluent chamber, and analyzed as a single sample.

** Weekly, during the initial four-week discharge period; monthly, thereafter.

Table 2: Heavy Metals/Cyanide

Heavy Metal and Cyanide	Instantaneous Maximum (mg/L)*	Daily Average (mg/L)**	Maximum Loading (Lbs/day)
Arsenic	4.0	1.0	1.2
Cadmium	0.6	0.5	0.3***
Chromium	5.0	2.75	2.4***
Copper	8.0	3.0	3.6
Lead	4.0	2.0	2.4
Mercury	0.2	0.1	0.12
Nickel	5.0	2.5	2.7***
Silver	3.0	1.0	1.2
Zinc	10.0	5.0	6.0
Cyanide	3.0	2.0	NA

* The instantaneous maximum is violated whenever the concentration of any sample, including a grab within a series used to calculate daily average concentrations, exceeds the limitation.

** The daily average limit is violated: a) for a continuous flow system when a composite sample consisting of four or more consecutive samples collected during a 24-hour period over intervals of 15 minutes or greater exceeds the limitation, or b) for a batch system when any sample exceeds the limitation. A composite sample is defined as at least four grab samples of equal volume taken throughout the processing day from a well-mixed final effluent chamber, and analyzed as a single sample.

*** Due to the elevated permitted daily discharge volume, the daily maximum poundage limits for these metals parameters have been adjusted (reduced). The more restrictive limitation (concentration or mass) shall prevail for determining violations.

3.3 Automated Data Monitoring and Storage

The water treatment system proposed for this project utilizes automated sampling and data storage technology based on an integral PLC for turbidity, pH, and flow. At predetermined intervals, each sampling device (turbidimeter, pH meter, flow meter) is queried, and the resultant data sample value is stored, along with a date/time stamp. This data is collected periodically from each PLC (generally every 15-minutes) and compiled into spreadsheets for evaluation and reporting purposes.

3.4 Manual Data Monitoring and Storage

In accordance with the Permit, samples will be taken and analyzed by an accredited laboratory. Clear water will work with the laboratory to ensure that all holding times for each analysis are met and that the detection limits are below the daily average discharge limits. All treatment equipment will be equipped with sampling spigots allowing for samples to be drawn from any point in the treatment train. These samples will be analyzed to ensure that all discharges from the water treatment system meet the specifications called out in the Permit. The samples will be analyzed using a 24-hour turn around time to ensure that treated water can be discharged in a timely manner, thereby reducing the risk of the treatment system becoming overwhelmed by large rain

events. All results will be distributed to EJ Rody and to Seattle Public Utilities on-site engineer. The contractor will immediately report any violation of discharge limits to the site RE.

As part of daily operations, Clear Water operators complete monitoring and operations forms (Attachment 5) which create a record for instrument calibration, effluent water quality and system performance. The Manual Data Collection Monitoring Form is used to generate a list of verification samples collected at approximate every fifteen (15) minute intervals. Technicians record verification readings for pH and turbidity by comparing in-line meter readings with bench-top meters to ensure the system is operating properly. The monitoring forms are printed on triplicate paper; one copy remains on site for the duration of the project, the other copies are taken to the Clear Water office, used for reporting and stored for a minimum of five years.

3.5 Remote Monitoring Capability

The water treatment systems proposed for this project will incorporate the capability to monitor site conditions such as detention basin level and rainfall, and relay this information in real-time via wireless internet access to a remote monitor.

Fremont Analytical

Container Requirements

Georgetown Flume Demolition Project

2009

www.fremontanalytical.com

Fremont Analytical

Table of Contents

GENERAL INFORMATION

Fremont Analytical Inc. is a full service environmental laboratory located in the Fremont neighborhood in Seattle, WA. Fremont Analytical offers a full range of analytical services including organic, inorganic and general chemistry analyses for soil, water and vapor. The Washington State Department of Ecology has endorsed Fremont Analytical with certified accreditation.

OUR SERVICES

VOLATILE ORGANICS

Laboratory services include volatile and semi-volatile organic (BNA, PAH) analysis by Gas Chromatography / Mass Spectrometry (GCMS) for sample matrices that include: Soil, Water, Vapor and Sediment.

TRACE METAL ANALYSIS (ICP-MS)

Analysis of soil, ground & drinking water for trace metals and selected non-metals. Fremont Analytical offers reporting at sub parts per billion (ppb) levels.

SPECIALITY ORGANICS (PCBS, PESTICIDES, HERBICIDES & PENTACHLOROPHENOL)

Providing low-level detection and rapid turnaround for specialty organics for all sample matrices.

STORM WATER

In accordance with The Washington State Department of Ecology's storm water permitting process, Fremont Analytical, Inc. provides complete and timely analyses of surface/storm water samples.

DRINKING WATER

Analysis of organic and inorganic drinking water analytes required by the Safe Drinking Water Act (SDWA). Fremont Analytical offers customized solutions, facilitating permit compliance.

ANALYTICAL METHODS

Fremont Analytical is certified by the Washington State Department of Ecology for organic, inorganic and general chemistry analyses. The laboratory follows approved Environmental Protection Agency (EPA), Standard Methods for the Examination of Water and Waste Water, and WADOE methods. The laboratory may deviate from these methodologies due to the nature or composition of the sample based on the reasonable judgment of the laboratory. Such modifications will be done in a manner consistent with recognized analytical procedures and good laboratory practices.

SAMPLE RECEIVING

Sample receiving hours are between 8:00am to 5:00pm – Monday through Friday. We can accommodate delivery after hours on weekends and on holidays, if scheduled in advance.

SAMPLE HOLDING TIMES

Samples should be received by Fremont Analytical as soon as possible. Please refer to *Container Requirements* for sample holding times, preservatives and sample collection requirements.

TURNAROUND TIMES

Standard turnaround is 5 days from the date and time of sample receipt for most sample analysis. We also offer expedited turnaround on many types of analysis, including:

- 48 hour
- 24 hour
- Same Day Service

Expedited turnaround should be coordinated in advance. Contact us to discuss dates and data delivery requirements.

CONTAINERS

Fremont Analytical can provide you with sample containers, labels, coolers and chain of custody forms for specific analytical methods. Please contact us with your bottle order.

SAMPLE PICK UP

Fremont Analytical offers sample pick-up and/or delivery of supplies at your office and/or field locations. Please contact us for your specific requirements.

CONFIDENTIALITY

Fremont Analytical maintains the confidentiality of all analytical data. No information regarding projects of analytical data will be released without direct authorization from our clients.

CONTAINER/SAMPLING REQUIREMENTS

WATER

Parameter	Method	Container/Preservatives	Holding Time
Cyanide, Total	EPA 335.2/335.3	1 L Amber Glass / Cool 4°C, NaOH	Analyze within 14 Days
Ignitability / Flashpoint	ASTM D93	250 mL Amber Glass / Cool 4°C	Analyze within 28 Days
Mercury (Hg)	EPA 200.8/7470	250 to 500 mL Polyethylene / Cool 4°C, HNO_3	Analyze within 28 Days
Metals, Dissolved (Except Mercury)	EPA 6020/200.8	250 to 500 mL Polyethylene (Field Filter) / Cool 4°C, HNO_3	Analyze within 6 Months
Metals, Total (Except Mercury)	EPA 6020/200.8	250 to 500 mL Polyethylene / Cool 4°C, HNO_3	Analyze within 6 Months
Polychlorinated Biphenyls (PCBs/Aroclor)	EPA 8082	1 L Amber Glass / Cool 4°C	Extract within 7 Days / Analyze within 40 Days of Extraction
Solids			
Settleable	SM 2540F	1 L Polyethylene / Cool 4°C	Analyze within 48 Hours
Total	SM 2540B	500 mL Polyethylene / Cool 4°C	Analyze within 7 Days
Total Dissolved (TDS)	SM 2540C	500 mL Polyethylene / Cool 4°C	Analyze within 7 Days
Total Suspended (TSS)	SM 2540D	500 mL Polyethylene / Cool 4°C	Analyze within 7 Days
Total Volatile (TVS)	SM 2540E	500 mL Polyethylene / Cool 4°C	Analyze within 7 Days

CONTACT

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T: 206.352.3790
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www.fremontanalytical.com

Fremont Analytical

2930 Westlake Ave. N., Suite 100
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Analysis of PCB's (Polychlorinated Biphenyls) in Water by EPA 8082

Project:
Client:
Client Project #:
Lab Project #:

					Duplicate		MS	MSD	
EPA 8082 (µg/L)	**MRL**	**Method Blank**	**LCS**	**<name>**	**<name>**	**RPD**	**<name>**	**<name>**	**RPD**
Date Extracted		<date>	<date>	<date>	<date>	%	<date>	<date>	%
Date Analyzed		<date>	<date>	<date>	<date>		<date>	<date>	
Matrix				Water	Water		Water	Water	
Aroclor 1016	0.3	nd		nd	nd				
Aroclor 1221	0.3	nd		nd	nd				
Aroclor 1232	0.3	nd		nd	nd				
Aroclor 1242	0.3	nd		nd	nd				
Aroclor 1248	0.3	nd		nd	nd				
Aroclor 1254	0.3	nd	0%	nd	nd		0%	0%	
Aroclor 1260	0.3	nd		nd	nd				
Surrogate Recovery									
Surr 1 (TCMX)		0%	0%	0%	0%		0%	0%	
Surr 2 (DCBP)		0%	0%	0%	0%		0%	0%	

"nd" Indicates no detection at the listed reporting limits
"int" Indicates that interference prevents determination
"C" Indicates coelution with Sample Peaks
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 65% to 135%
Surrogates and Sike Concentration = 25 µg/L
Spiked Concentration = 10 µg/L

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Analysis of Polyaromatic Hydrocarbons in Water by EPA Method 8270C

Project:
Client:
Client Project #:
Lab Project #:

					Duplicate		MS	MSD	
EPA 8270C (ug/L)	**MRL**	**Method Blank**	**LCS**	**<name>**	**<name>**	**RPD %**	**<name>**	**<name>**	**RPD %**
Date Extracted		<date>	<date>	<date>	<date>		<date>	<date>	
Date Analyzed		<date>	<date>	<date>	<date>		<date>	<date>	
Matrix				Water	Water		Water	Water	
Naphthalene	0.5	nd		nd	nd				
1-Methylnaphthalene	0.5	nd		nd	nd				
2-Methylnaphthalene	0.5	nd		nd	nd				
Acenaphthene	0.5	nd	0%	nd	nd		0%	0%	
Acenaphthylene	0.5	nd		nd	nd				
Fluorene	0.5	nd		nd	nd				
Phenanthrene	0.5	nd		nd	nd				
Anthracene	0.5	nd		nd	nd				
Fluoranthene	0.5	nd		nd	nd				
Pyrene	0.5	nd	0%	nd	nd		0%	0%	
Benzo(a)anthracene	0.1	nd		nd	nd				
Chrysene	0.1	nd		nd	nd				
Benzo(b)fluoranthene	0.1	nd		nd	nd				
Benzo(k)fluoranthene	0.1	nd		nd	nd				
Benzo(a)pyrene	0.1	nd		nd	nd				
Indeno(1,2,3-cd)pyrene	0.1	nd		nd	nd				
Dibenzo(a,h)anthracene	0.1	nd		nd	nd				
Benzo(g,h,i)perylene	0.5	nd		nd	nd				
Total PAH Carcinogens				0.0	0.0				

Total PAH Carcinogens Defined as:

Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Ideno(1,2,3-cd)pyrene & Dibenzo(a,h)anthracene

Surrogate Recovery								
(Surr 1) 2-Fluorobiphenyl	0%	0%	0%	0%	0%	0%	0%	0%
(Surr 2) p-Terphenyl	0%	0%	0%	0%	0%	0%	0%	0%

"nd" Indicates not detected at listed reporting limits
"int" Indicates that interference prevents determination
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Samples may be run under SIM
Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 50% to 150%
Surrogates and Spike Concentration = 25 ug/L

Fremont Analytical

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Analysis of Total Metals in Water by EPA Method 6020

Project:
Client:
Client Project #:
Lab Project #:

					Duplicate		MS	MSD	
EPA 6020 (mg/L)	**MRL**	**Method Blank**	**LCS**	**<name>**	**<name>**	**RPD**	**<name>**	**<name>**	**RPD**
Date Extracted		<date>	<date>	<date>	<date>	%	<date>	<date>	%
Date Analyzed		<date>	<date>	<date>	<date>		<date>	<date>	
Matrix				Water	Water		Water	Water	
Arsenic (As)	0.002	nd	0%	nd	nd		0%	0%	
Cadmium (Cd)	0.0004	nd	0%	nd	nd		0%	0%	
Chromium (Cr)	0.002	nd	0%	nd	nd		0%	0%	
Lead (Pb)	0.002	nd	0%	nd	nd		0%	0%	
Mercury (Hg)	0.0005	nd	0%	nd	nd		0%	0%	
Nickel (Ni)	0.01	nd	0%	nd	nd		0%	0%	
Silver (Ag)	0.0004	nd	0%	nd	nd		0%	0%	
Zinc (Zn)	0.01	nd	0%	nd	nd		0%	0%	

"nd" Indicates no detection at the listed reporting limits
"int" Indicates that interference prevents determination
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
LCS, LCSD, MS, MSD: 65% to 135%
Spike Concentrations:
As, Cr = 100 µg/L
Pb = 50 µg/L
Cd, Ag = 5 µg/L
Hg = 10 µg/L
Zn = 100 µg/L

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Analysis of Cyanide by EPA Method 335.4

Project:
Client:
Client Project #:
Lab Project #:

EPA Method 335.4 (mg/L)	MRL	Method Blank	LCS	Sample	Duplicate Sample
Date Analyzed		<date>	<date>	<date>	<date>
Matrix				Water	Water
Cyanide	0.005	nd	0%	nd	nd

"nd" Indicates no detection at the listed reporting limits
"int" Indicates that interference prevents determination
"J" Indicates estimated value
"LCS" Indicates Laboratory Control Sample
"MRL" Indicates Method Reporting Limit